

Name: \_\_\_\_\_ score: \_\_\_\_\_ / 10

There are 10 points possible on this quiz. No aids (book, notes, etc.) are permitted. You may use a non-programmable calculator. **Show all work and supporting calculations for full credit. Explain how you get your answers.**

1. (6 points) The student government is holding elections for president. There are four candidates (A,B,C and D for convenience). The preference schedule is below.

number of voters	80	90	60	130	40
1st choice	A	B	B	D	C
2nd choice	D	A	D	C	A
3rd choice	B	C	C	A	B
4th choice	C	D	A	B	D

For each of the following, provide supporting calculations.

- (a) How many voters voted in this election? \_\_\_\_\_
- (b) How many voters are needed for a majority? \_\_\_\_\_
- (c) How many votes are needed for a plurality? \_\_\_\_\_
- (d) Find a winner under the plurality method. Show some work. \_\_\_\_\_
- (e) Did the winner under the plurality method also win a majority? \_\_\_\_\_
- (f) Do you think the plurality winner in part (d) represents the will of the voters? Explain why or why not in a sentence.

2. (4 points) Below is the same preference schedule.

number of voters	80	90	60	130	40
1st choice	A	B	B	D	C
2nd choice	D	A	D	C	A
3rd choice	B	C	C	A	B
4th choice	C	D	A	B	D

- (a) In a one-to-one comparison, who is preferred, candidate A or candidate B? (You must show your calculation.)

Candidate \_\_\_\_\_ is preferred.

- (b) Explain why candidate B cannot be the Condorcet winner.

- (c) Determine if there is a Condorcet winner. If so, who is it? Otherwise, explain why not. The results of each one-on-one comparison (except A vs B) are provided below.

matchup	A vs C	A vs D	B vs C	B vs D	C vs D
tally	A: 170 C: 230	A: 210 D: 190	B: 230 C: 170	B: 190 D: 210	C: 130 D: 270
winner	C	A	B	D	D